



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/427,866	04/26/1995	HISATAKA SUGIYAMA		4338
20457	7590	05/24/2006		
ANTONELLI, TERRY, STOUT & KRAUS, LLP			EXAMINER	
1300 NORTH SEVENTEENTH STREET			PHAM, HAI CHI	
SUITE 1800				
ARLINGTON, VA 22209-3873			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	08/427,866	SUGIYAMA ET AL.
Examiner	Art Unit	
Hai C. Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 13-33 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 23,25,27,29 and 31-33 is/are allowed.  
 6) Claim(s) 13,15,20,22,24 and 30 is/are rejected.  
 7) Claim(s) 14,16-19,21,26 and 28 is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 26 April 1995 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. 07/958,162.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 5/18/00, 11/9/01, 11/3/04, 4/28/05, 7/5/05 6) Other: \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)

## DETAILED ACTION

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 07/958,162, filed on 10/08/92.

### ***Claim Objections***

2. The following claims are objected to because of the following informalities:

#### Claim 14:

- The following expression " $\lambda/4 \geq | (1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d |$ " to  
--  $\lambda/4 \geq | (1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d |$  --.

#### Claim 18:

- The following expression " $\lambda/4 \geq | (1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d |$ " to  
--  $\lambda/4 \geq | (1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d |$  --.

#### Claim 19:

- The following expression " $\lambda/4 \geq | (1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d |$ " to  
--  $\lambda/4 \geq | (1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d |$  --.

#### Claim 23:

- Line 14, "NB is a reflective index" should read --NB is a refractive index of the substrate--.

#### Claim 29:

Art Unit: 2861

- The following expression " $\lambda/4 \geq |(1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d|$ " to  
$$-- \lambda/4 \geq |(1/8 NB) \cdot \{(1/NB^2) - 1\} NAF^4 \cdot \Delta d| --.$$

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 15, 20, 24 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

#### Claim 15:

- The following limitation "from a predetermined plane" at line 2 is unclear in that it is not known which reference plane related to the layered structure of the disk is being used as the "predetermined plane". The examiner will assume that an imaginary plane passing through the middle point of the resin layer and parallel to the surface of the substrate is being used as the claimed "predetermined plane" until the Applicants say otherwise.

#### Claim 20:

- The following limitation "from a predetermined plane" at line 2 is unclear in that it is not known which reference plane related to the layered structure of the disk is being used as the "predetermined plane". The examiner will assume that an imaginary plane passing through the middle point of the resin layer and parallel

to the surface of the substrate is being used as the claimed "predetermined plane" until the Applicants say otherwise.

Claim 24:

- The following limitation "from a predetermined plane" at line 11 is unclear in that it is not known which reference plane related to the layered structure of the disk is being used as the "predetermined plane". The examiner will assume that an imaginary plane passing through the middle point of the resin layer and parallel to the surface of the substrate is being used as the claimed "predetermined plane" until the Applicants say otherwise.

Claim 30:

- The following limitation "from a predetermined plane" at line 2 is unclear in that it is not known which reference plane related to the layered structure of the disk is being used as the "predetermined plane". The examiner will assume that an imaginary plane passing through the middle point of the resin layer and parallel to the surface of the substrate is being used as the claimed "predetermined plane" until the Applicants say otherwise.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2861

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 13 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Iida et al. (U.S. 5,171,392).

Iida et al. discloses an optical medium disc comprising a substrate (substrate 11) having a structure of an uneven-like shape on a flat surface (the substrate 11 carries the recording pit patterns P1 on its lower surface such that the lower surface of the substrate has an uneven shape), a first reflecting film (first reflecting layer 12) formed on the substrate and having a surface contoured to the uneven-like shape of the substrate (the first reflecting layer 12 having a surface contoured to the pit patterns P1), for reflecting a light having a predetermined wavelength (e.g., 400 nm), a resin layer (resin layer 14) having an uneven-like shape on a flat surface directly formed on the first reflecting film (the resin layer 14 having a surface contoured to the pit patterns P1 as that of the reflecting layer 12, the opposite side of the resin layer 14 carrying the recording pit patterns P2), and a second reflecting film (second reflecting layer 15) formed on the resin layer and having a surface contoured to the uneven-like shape of the resin layer (the second reflecting layer 15 having a surface contoured to the pit patterns P2 formed on the surface of the resin layer 14), for reflecting a light having a predetermined wavelength (e.g., 800 nm), wherein the uneven-like shapes of the first

and second reflecting films represent information, respectively (the pit patterns P1 and P2 represent data information) (Figs. 1a-1g, 2a-2g) (col. 3, lines 1-68).

With regard to claim 22, Iida et al. further teaches the first and the second reflecting films being formed of a plurality of layers (the reflecting layers may be formed by laminating films of high-refractive index material and low-refractive index material to have a narrow reflection light band) (col. 5, lines 4-13).

7. Claims 13, 15, 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Nagashima et al. (U.S. 5,134,604).

Nagashima et al. discloses an optical medium disc comprising a substrate (substrate 1) having a structure of an uneven-like shape on a flat surface (the substrate 1 having data written to the slopes of V-grooves on its lower surface 2) (col. 3, lines 54-61), a first reflecting film (semi-transparent thin film layer 3) formed on the substrate and having a surface contoured to the uneven-like shape of the substrate, for reflecting a light having a predetermined wavelength (the semi-transparent thin film layer 3 has a surface contoured to the data information patterns on the surface 2 and reflects part of an incident laser light) (col. 3, lines 61-63), a resin layer (transparent material layer 4) having an uneven-like shape on a flat surface directly formed on the first reflecting film (the transparent layer 4 or 15 being made of UV-curable resin) (col. 6, lines 66-68), and a second reflecting film (reflective film layer 6) formed on the resin layer and having a surface contoured to the uneven-like shape of the resin layer, for reflecting a light having a predetermined wavelength (the reflective film layer 6 has a surface contoured

to the data information patterns on the surface 5 of the transparent layer 4 and reflects all incident laser light) (col. 3, line 65 to col. 4, line 1), wherein the uneven-like shapes of the first and second reflecting films represent information, respectively (the uneven shapes of the reflecting layers 3 and 6 represents the data information being stored on the surfaces 2 and 5).

With regard to claims 15 and 24, Nagashima et al. further teaches the first and second films lie in a range from a predetermined plane to  $\pm 50 \mu\text{m}$  in a direction perpendicular to the substrate (the distance between the data surfaces 2 and 5 is at least 100  $\mu\text{m}$ , or, in other words, the reflecting layers 3 and 6 are located at  $\pm 50 \mu\text{m}$  from an imaginary plane passing at the middle of the transparent layer 4 in the direction perpendicular to the substrate) (col. 4, lines 13-20).

#### ***Allowable Subject Matter***

8. Claims 23, 25, 27, 29, 31-33 are allowed.
9. Claims 14, 16-19, 21, 26, 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. Claims 20 and 30 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
11. The following is an examiner's statement of reasons for allowance: claims 14, 18, 19, 20, 23 and 29 are patentable over the prior art patents and printed publications

because of the specific construction arrangement of optical disc medium, which includes a first and a second reflecting layers separated by a distance  $d$ , and wherein the displacement of optical axes of the first and second reflecting films from a predetermined reference surface is related to the wavelength of the light irradiating the optical disc for reproducing information, the refractive index of the substrate and the numerical aperture of the optical system for converging the light. The combined limitations as currently claimed are not taught by the prior art of record alone or in combination.

The primary reason for the indication of the allowability of claims 16, 25, 26, 31 is the inclusion therein, in combination as currently claimed, of the limitations "the relationship between the distance  $d$  of the first and second films, the pitch of a coarsest pattern of an information mark recorded on the optical disc medium, and the numerical aperture of the optical system for converging the light" and "wherein a radius of a light spot for a reflecting film adjacent to a reflecting film being reproduced is formed of a size larger than a pitch of the coarsest pattern of the information mark recorded on the optical disk medium". The combined limitations as currently claimed are not found taught by the prior art of record considered alone or in combination.

The primary reason for the indication of the allowability of claims 17, 21, 27, 28, 32 is the inclusion therein, in combination as currently claimed, of the limitation "wherein in a power spectrum of a modulated signal of information recorded on the optical disk medium, a distance  $d$  between the first and second reflecting films is determined so that a frequency at which said spectrum starts to abruptly fall is set to be higher than a cut-

Art Unit: 2861

off frequency of an optical property function for an adjacent reflecting film", which is not found taught by the prior art of record considered alone or in combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Hai Pham*

HAI PHAM  
PRIMARY EXAMINER

May 22, 2006